

Regional Climate Data Assimilation System (R-CDAS) and NAME Data Impact and Prediction Experiments

Table 1: List of all experiments

Expt name	SST	P assimilation	NAME soundings	remarks
a) P assimilation experiments with RCDAS				
RCDASw(P)	RR	yes	yes	same as RCDASop
RCDASwt(P)	RR	yes	no	
RCDASw(no P)	RR	no	yes	
RCDASwt(no P)	RR	no	no	
b) SST experiments with RCDAS				
RCDASw(RR SST)	RR	yes	yes	same as RCDASop
RCDASwt(RR SST)	RR	yes	no	same as RCDASwt (P)
RCDASw(MPM SST)	MPM	yes	yes	
RCDASwt(MPM SST)	MPM	yes	no	
c) EDAS experiments				
EDASw	operational SST	in the US.	Yes	Forecast up to 84 hours
EDASwt	operational SST	in the US.	No	Forecast up to 84 hours
d) EDAS experiments				
CDASw	operational SST	indirectly	Yes	Forecast up to 84 hours
CDASwt	operational SST	indirectly	No	Forecast up to 84 hours
CDASwtmex	operational SST	indirectly	No soundings over Mexico	

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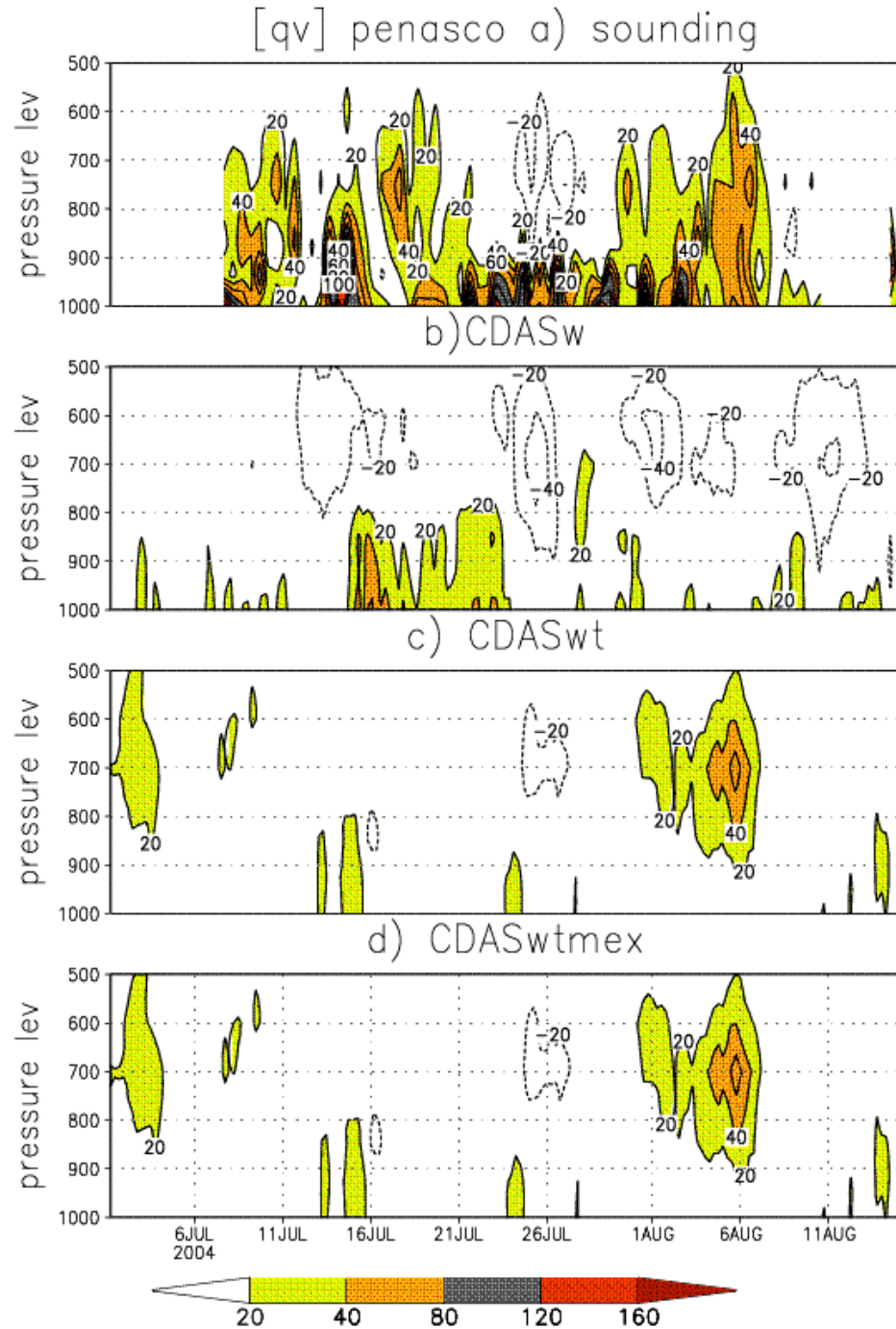


Fig. 1: Vertical profile of [qv] at Puerto Penasco (31.3 °N, 113.3°W) from (a) sounding observations, (b) the CDAS with the NAME soundings, CDASw, (c) the CDAS without the NAME soundings CDASwt and (d) CDAS without soundings over Mexico CDASwtmex. Contour interval is $20 \text{ g kg}^{-1} \text{ m s}^{-1}$, with values greater than $20 \text{ g kg}^{-1} \text{ m s}^{-1}$ colored.

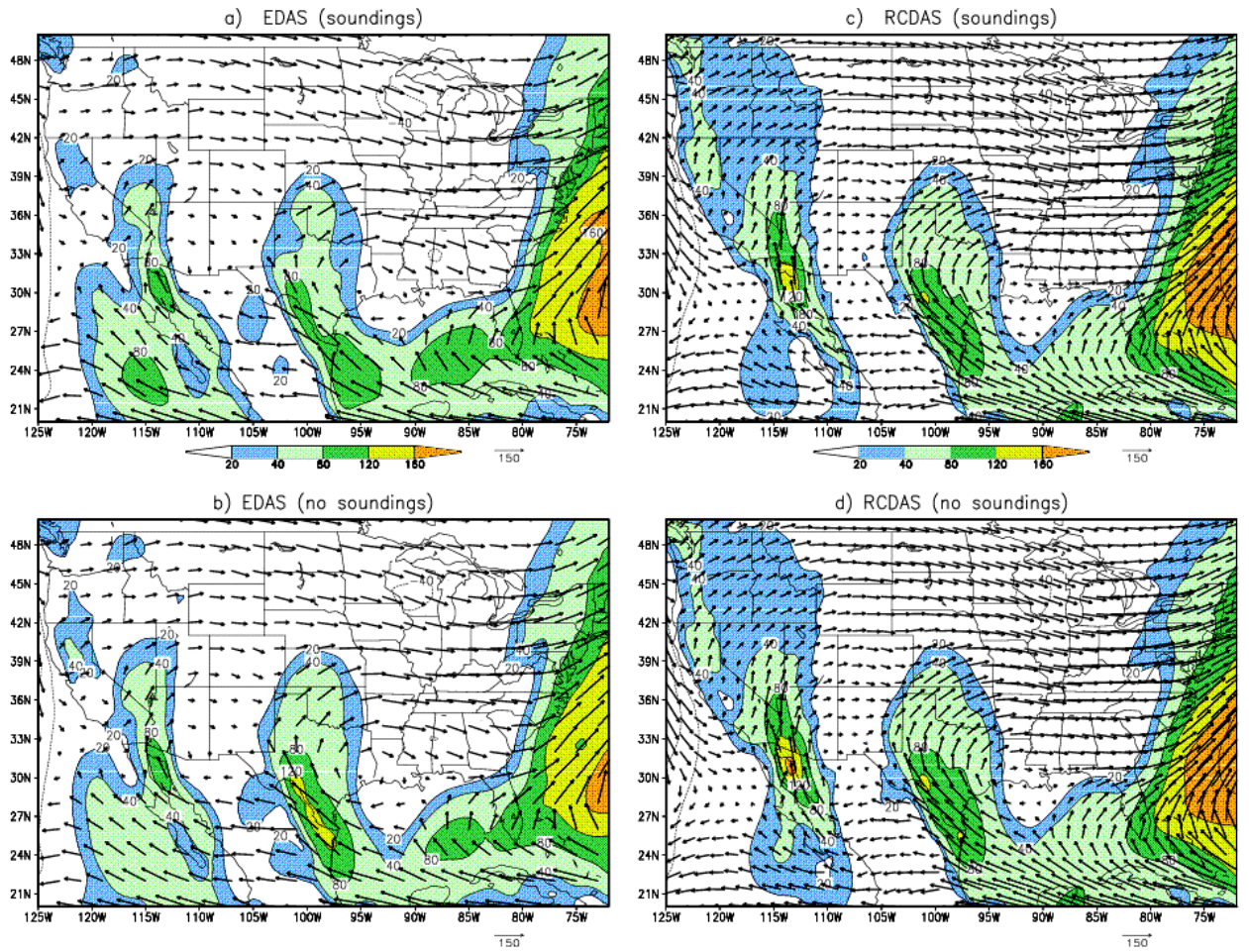


Fig. 2: Vertically integrated moisture flux ($[q_u]$, $[q_v]$) (vectors) averaged over the EOP period from (a) the RCDASw(P) and (b) RCDAS wt(P), (c) EDASw and (d) ECDASwt. The unit vector is 150 kg (m s)⁻¹. The vertically integrated moisture flux $[q_v]$ is contoured and shaded. Contour interval is 30 kg (m s)⁻¹.

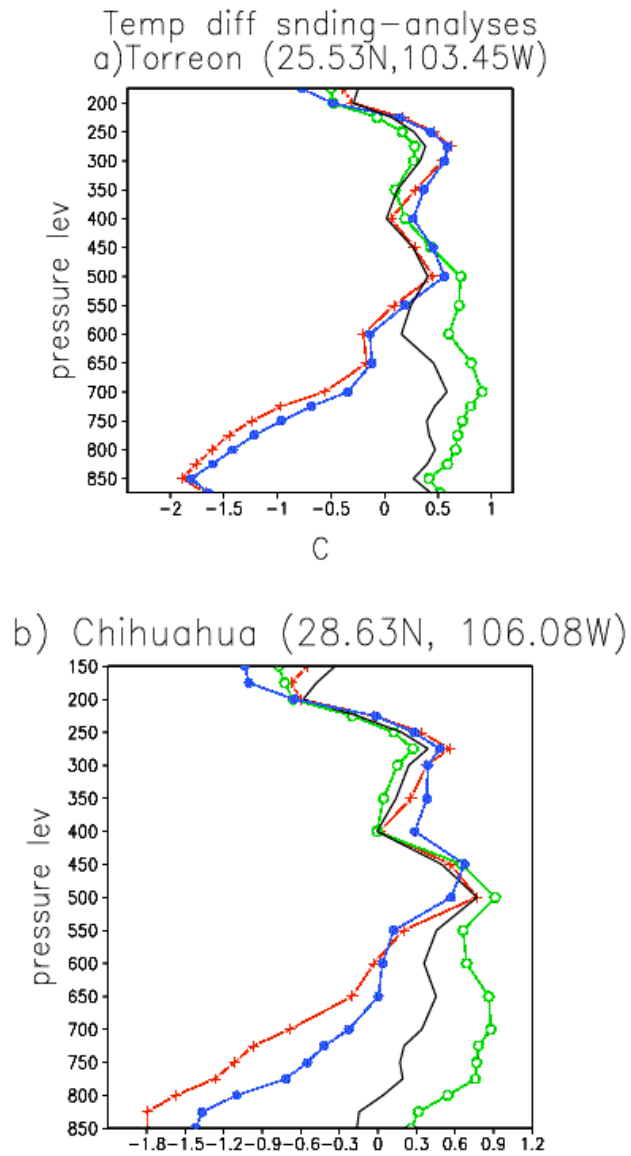


Fig.3: (a) difference of temperature vertical profile at Torreon (25.53°N, 103.45 °W) between the sounding and RCDASw(P) (solid black line), RCDASwt(P) (green open circles), RCDASw(no P) (blue circles) and RCDASwt(red (crosses) averaged over the EOP period and (b) same as (a), but for the station Chihuahua (28.63°N, 106.08°W).

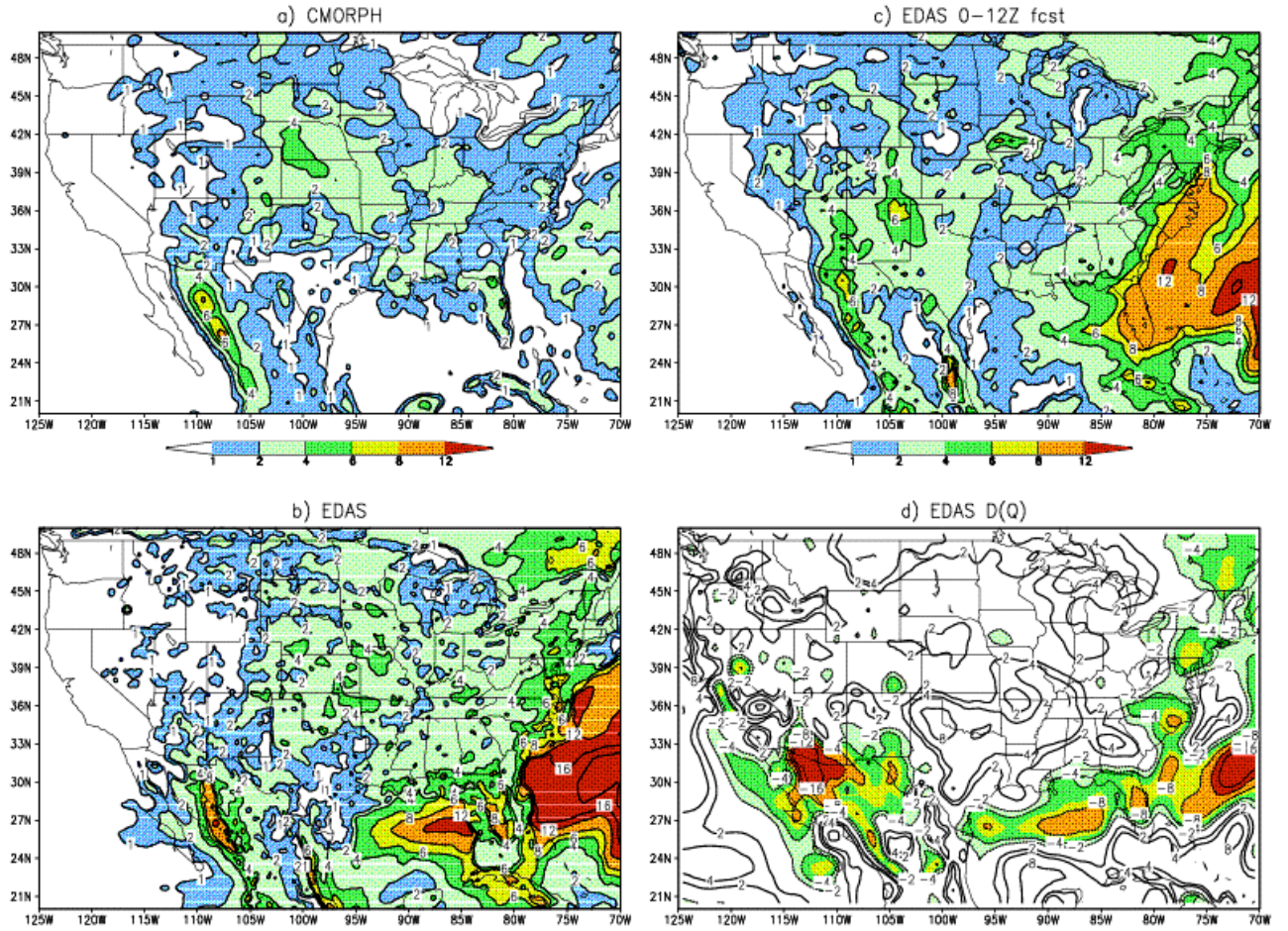


Fig. 4: Precipitation from (a) the CMORPH, and (b) the EDAS, and (c) EDAS 0-12Z forecasts initialized from the operational EDAS at 0z and 12z averaged over the EOP period. Contour interval is 2 mm day^{-1} . Zero contours are omitted. Contours 1 mm day^{-1} are added, (d) vertically integrated moisture divergence. Contour intervals are -8, -4, -2, -1, 1, 2, 4, 8 mm day^{-1} . Negative values colored.

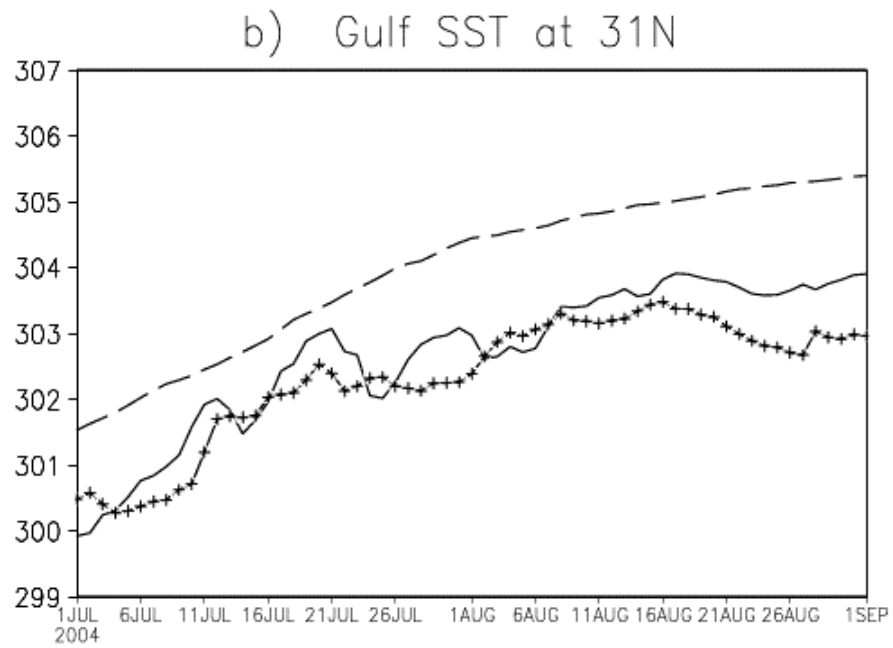


Fig. 5: Daily MPM SST (solid line), real time operational SST (crosses) and RR SST (dashes) averaged over oceanic grid points in the Gulf of California at 31 ° N.

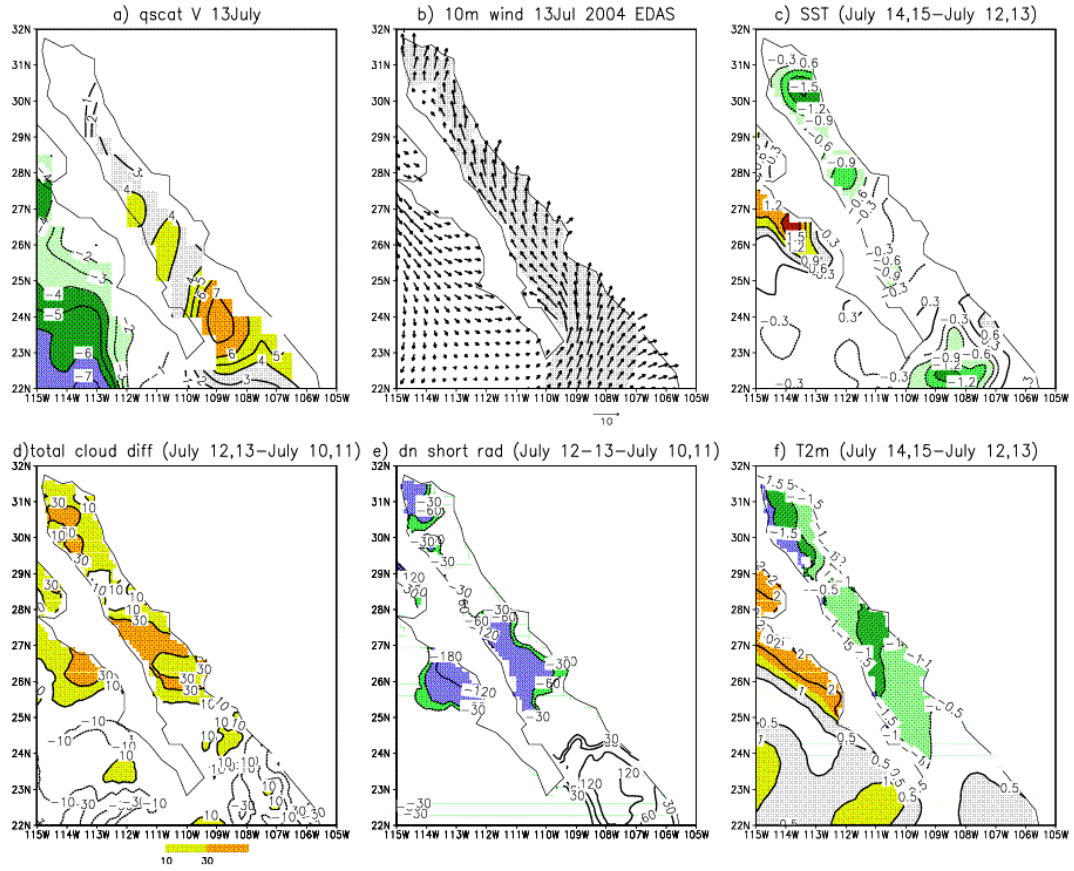


Fig.6: (a) Meridional wind averaged from 0Z and 12 Z 13 July 2004 from the Quickscat. Contour interval is 1 m s^{-1} . Positive values are shaded. (b) same as (a), but for 10 m wind from the 12 km EDAS. The unit vector is 10 m s^{-1} , (c) the MPM SST difference between the 14-15 July 2004 mean and 12-13 July 2004 mean. Contour interval is $0.3 \text{ }^{\circ}\text{C}$. Negative values are shaded, (d) difference in total cloud amount (%) between the 12-13 July 2004 mean and the 10-11 July mean. Contour interval is 30%. Positive values are shaded. Zero contours are omitted. Contours -10% and 10% are added, (e) same as (d), but for the downward solar radiation. Contour interval is 30 W m^{-1} . Negative values are shaded and (f) Same as Fig. 6c but for T2m temperature above the ground,